

Exams & Review Sessions

Midterm 1: September 27th (in class)

Review with Lecturers: September 25th from 5:00 PM to 6:50 PM in 1GH 319

Review with Teaching Assistants: September 26th from 7:00-8:30 PM in 31 PSYCH

Midterm 2: October 30th (in class)

Review with Lecturers: October 25th from 5:00 PM to 6:50 PM in 1GH 223

Review with Teaching Assistants: October 29th from 7:00-8:30 PM in 31 PSYCH

Midterm 3: December 11th (in class)

Review with Lecturers: December 6th from 5:00 PM to 6:50 PM in 1GH 223

Review with Teaching Assistants: December 10th from 7:00-8:30 PM in 31 PSYCH

1) Tuesday, Sept. 18: Theory of Mind

**2) Thursday, Sept. 20: finish Theory of Mind
Conceptual Development 1**



3) Tuesday, Sept. 25: Conceptual Development 2

Thursday, Sept. 27: EXAM 1

4) Tuesday, Oct. 2: Eyewitness Testimony

5) Thursday, Oct. 4: Culture and Development

Early Conceptual Development 2

September 25, 2012

Outline

- What are concepts? What are they for?
- What do we have concepts of?
- How are concepts represented? What's their structure?
- What's the nature of children's concepts?

How are concepts represented?

- 1) Classical view (defining features)
- 2) Probabilistic view (family resemblance)
- 3) Concepts-in-theories view

The concepts-in-theories view

The problem with the probabilistic view is that it ignores the extensive causal knowledge people have about the features of a category.

- e.g., “have wings” and “can fly” are not just unrelated features – one enables the other

The concepts-in-theories view



1. What's the percentage of curved bananas?
What's the percentage of curved boomerangs?
2. Is a straight banana an okay banana?
Is a straight boomerang an okay boomerang?

Medin & Shoben, 1988

The concepts-in-theories view

The problem with the probabilistic view is that it ignores the extensive causal knowledge people have about the features of a category.

- e.g., “being curved” is equally true of bananas and boomerangs (same probabilistic feature “strength”), but a straight boomerang is a much worse example of a boomerang than a straight banana is of the category *banana*

Concepts are embedded in intuitive theories about how the world works.

The concepts-in-theories view

What are some features of the concept “drunk” (as in “intoxicated”)?

Here’s a story about a party I went to last night.

“jumping into a pool with one’s clothes on” – not quite a typical feature of the concept “drunk” but we can nevertheless use it to categorize somebody as drunk (Murphy & Medin, 1985)

Outline

- What are concepts? What are they for?
- What do we have concepts of?
- How are concepts represented? What’s their structure?
- What’s the nature of children’s concepts?

The nature of children's concepts

For a long time, young children's concepts were viewed as

- perceptually-based
- concrete
- "atheoretical"

Flavell (1977): young children are "prone to accept things as they seem to be, in terms of their outer, perceptual, phenomenal, on-the-surface characteristics"

Example 1: Piaget

Preoperational children (younger than about 7) focus on static, superficial features.

CONSERVATION OF NUMBER	Initial State	Transformation	Final State
			
	"Is there the same number or a different number?"	"Now watch what I do" (spreading one row).	"Now, is there the same number or a different number?"

Example 2: Shape bias

When learning a new word, preschool-age children seem to use it for things of the same shape, even if they are from different categories.

This is a dax in puppet language.

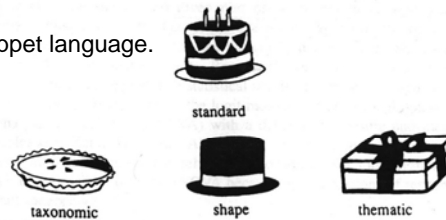


Figure 1. Sample material set used for Experiments 1 through 3.

Which of these is another dax?

Imai et al., 1994

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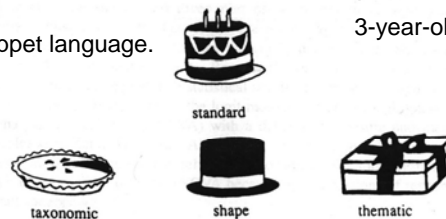


Figure 1. Sample material set used for Experiments 1 through 3.

Which of these is another dax?

3-year-olds: **68%** shape choices

Imai et al., 1994

Example 3: Transformation task (Keil)

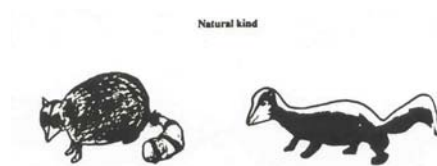
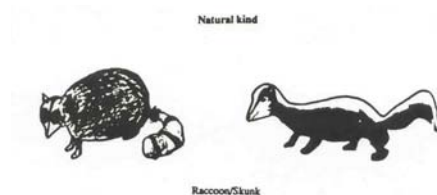


TABLE 3-1 Examples of Keil's Transformations Procedure

NATURAL KIND: RACCOON/SKUNK

The doctors took a raccoon (show picture of raccoon) and shaved away some of its fur. They dyed what was left all black. Then they bleached a single strip all white down the center of its back. Then, with surgery (explained to child in preamble), they put in its body a sac of super smelly odor, just like a skunk has (with younger children "odor" was replaced with "super smelly yucky stuff"). When they were all done, the animal looked like this (show picture of skunk). After the operation was this a skunk or a raccoon? (Both pictures were present at the time of the final question.)

Example 3: Transformation task (Keil)



4-year-olds: racoon is now a skunk

2nd graders: still a racoon

Are young children really that limited?

Can they really not go beyond surface appearances?

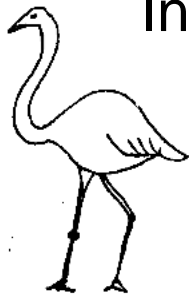
...How about their Theory of Mind?

Some early evidence from preschoolers' generalization

Would children generalize information from one object to another on the basis of perceptual similarity or kind membership (when the 2 are dissociated)?

Gelman & Markman, 1986

Inductive Inference



Look at this bird. It
feeds its babies
mashed up food.



Look at this bat. It
feeds its babies milk.

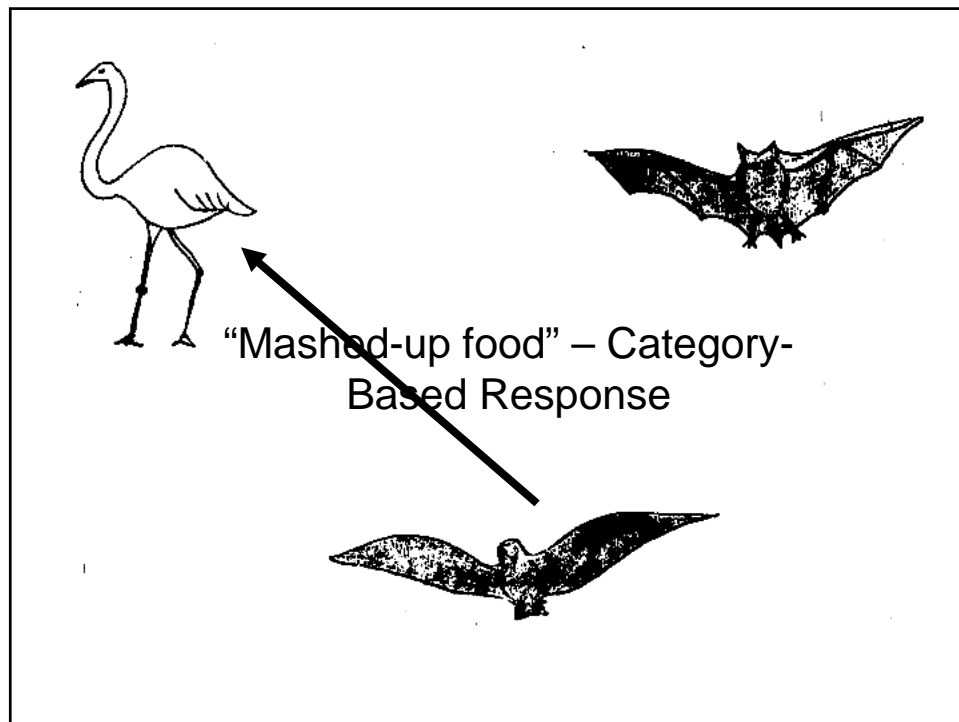


Look at this bird. Does it feed its
babies milk or mashed up food?



“Milk” – Perceptually-Based
Response

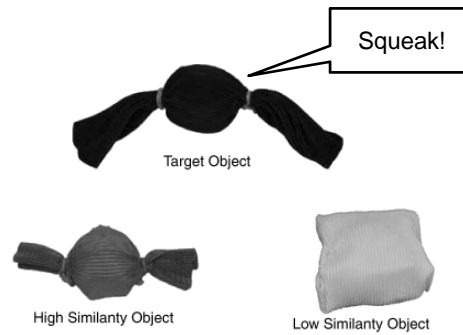




Gelman & Markman, 1986

- 68% of 4-year-olds generalize from the other, perceptually dissimilar, category member (e.g., the flamingo)

A similar demonstration in 13-month-olds!

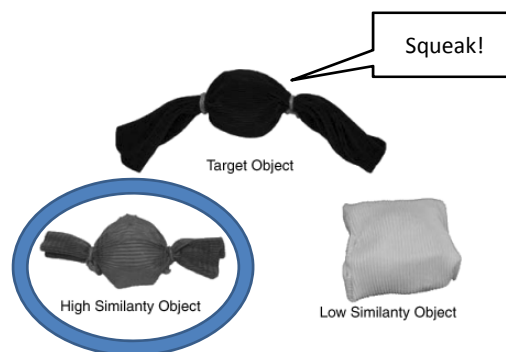


Both test objects are disabled – how hard will infants try to produce the sound?

Graham, Kilbreath, & Welder, 2004

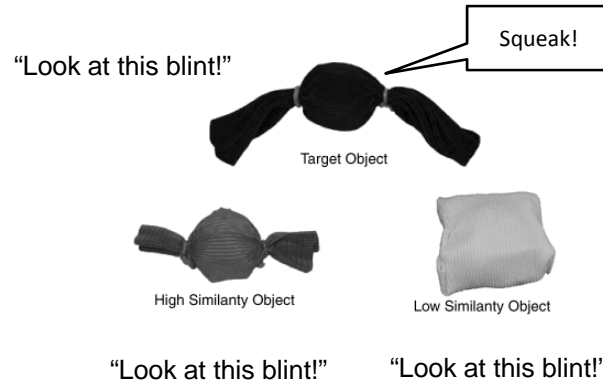
A similar demonstration in 13-month-olds!

NO LABEL condition: "Look at this one!"



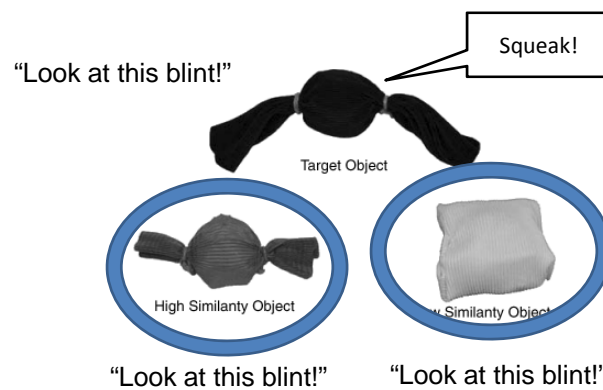
A similar demonstration in 13-month-olds!

LABEL condition: "Look at this blint!"



A similar demonstration in 13-month-olds!

LABEL condition: "Look at this blint!"



This means that ...

- Even at 13 months, infants can go beyond appearances and expect 2 dissimilar-looking things that have the same name (and are thus part of the same category) to share a nonobvious property

Children's knowledge about insides:
Can similar-looking things have different insides?



1. Which one looks most
like the pig, the piggy bank
or the cow?

Gelman & Wellman, 1991

Children's knowledge about insides:
Can similar-looking things have different insides?



2. Which one has the same
kinds of insides as the pig,
the piggy bank or the cow?

Gelman & Wellman, 1991

Children's knowledge about insides:
Can similar-looking things have different insides?

3- and 4-year-olds responded correctly on this task, suggesting that

- appearances aren't everything to them
- they realize that things that look similar don't always have the same stuff inside
- they realize that things that look different can in fact have very similar stuff inside

Children's knowledge about insides: What's more important? Insides or outsides?



1. Insides removal:

What if you take out the stuff inside the dog, you know, the blood and bones and things like that and got rid of it and all you have left are the outsides?

Is it still a dog?

Can it still bark and eat dog food?

Gelman & Wellman, 1991

Children's knowledge about insides: What's more important? Insides or outsides?



2. Outsides removal:

What if you take off the stuff outside of the dog, you know, the fur and got rid of it and all you have left are the insides?

Is it still a dog?

Can it still bark and eat dog food?

Gelman & Wellman, 1991

Children's knowledge about insides: What's more important? Insides or outsides?

4- and 5-year-olds realize the importance of insides!

- Is it still a dog?
remove the insides: 72% "no"
remove the outsides: 35% "no"
- Can it still bark and eat dog food?
remove the insides: 92% "no"
remove the outsides: 29% "no"

Children's understanding of innate potential The "nature-nurture" study

"Now I'm going to tell you about a cow named Edith. Look, here's a picture of Edith when she was a baby. Right after Edith was born, when she was just a tiny baby cow, she was taken to a farm that had pigs – lots of pigs. See, here are the pigs on the farm. The pigs took care of Edith. Edith grew up on the farm with all the pigs, and she never saw another cow."



Gelman & Wellman, 1991



Children's understanding of innate potential

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Physical feature:

When Edith got to be a grown-up, what did her tail look like: was it straight or was it curly?

Behavior:

When Edith got to be a grown-up, what sound did she make: did she say "moo" or did she say "oink"?

Gelman & Wellman, 1991

Children's understanding of innate potential

The "nature-nurture" study

Baby	Upbringing	Questions
rabbit	monkeys	long or short ears? rather have carrots or bananas?
tiger	horses	striped or plain fur? neigh or roar?
cow	pigs	straight or curly tail? say "moo" or say "oink"?
mouse	dogs	round or floppy ears? run away from or chase cats?
kangaroo	goats	have pouch or no pouch? good at hopping or climbing?

Children's understanding of innate potential The "nature-nurture" study

physical features: 67% category-based
responses (e.g., straight tail)

behaviors: 86% category-based
responses (e.g., say "moo")

4- and 5-year-olds understand the fact that
some features and behaviors have an innate
basis and develop even despite an atypical
environment

Re-evaluating the nature of children's concepts

- Children certainly do not seem limited to considering superficial properties.
- On the contrary, children can reason about the non-obvious aspects of category membership (e.g., shared insides, shared innate potential, shared behaviors).
- As with adults, children's concepts are embedded within their naive theories about the world – within their causal knowledge about how the world works.

Children are “essentialists” (e.g., Gelman)

A particular type of naive theory seems to characterize children’s (and adults’) thinking very well – “naive essentialism”.

Children are “essentialists” (e.g., Gelman)

Children assume that categories of things have hidden (often internal) “essences” that determine

- category membership
- external appearances
- category-typical behaviors, preferences, etc.

This belief in an essence is often vague – just a “placeholder”. Children don’t know too many specifics but assume that there is some essence.

Children are “essentialists” (e.g., Gelman)

... with respect to

- natural kinds?
- social categories?
- artifacts?

Children’s understanding of innate potential The “nature-nurture” study

IS THIS STUDY EVIDENCE OF ESSENTIALISM?

“Now I’m going to tell you about a cow named Edith. Look, here’s a picture of Edith when she was a baby. Right after Edith was born, when she was just a tiny baby cow, she was taken to a farm that had pigs – lots of pigs. See, here are the pigs on the farm. The pigs took care of Edith. Edith grew up on the farm with all the pigs, and she never saw another cow.”



Gelman & Wellman, 1991



Children's knowledge about insides: What's more important? Insides or outsides?



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Insides removal:

What if you take out the stuff inside the dog, you know, the blood and bones and things like that and got rid of it and all you have left are the outsides?

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Gelman & Wellman, 1991



Look at this bird. It
feeds its babies
mashed up food.

IS THIS STUDY
EVIDENCE OF
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Look at this bat. It
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Look at this bird. Does it feed its
babies milk or mashed up food?

Children are “essentialists” (e.g., Gelman)

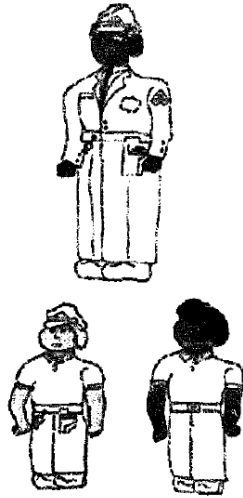
... with respect to

- natural kinds? 
- social categories?
- artifacts?

Do children essentialize social categories?

- Race
- Gender

Do children essentialize race?



Race vs. occupation:

Growth question:

One of these 2 kids will grow up to be this adult. Which kid is it?

Inheritance question:

One of these 2 kids is the adult's son. Which kid is it?

Hirschfeld, 1995

Do children essentialize race?



From age 4 on, clear preference for race over occupation (or occupation-related clothing).

Another contrast:
race vs. body build

Preference for race emerges even in 3-year-olds.

Hirschfeld, 1995

Do children essentialize race?

“These two people. Mr. and Mrs. Smith, had a baby girl [subject is shown a picture of black couple]. That means that the baby came out of Mrs. Smith’s tummy. Right after it came out of her tummy, the baby went to live with these people, Mr. and Mrs. Jones [subject is shown picture of white couple]. The baby lived with them and Mr. and Mrs. Jones took care of her. They fed her, bought her clothes, and hugged her and kissed her when she was sad.”



Hirschfeld, 1995

Do children essentialize gender?

- Another nature/nurture study:

e.g., a boy was raised from birth on an island populated entirely by girls and women

Behaviors/preferences: Will he like to play football when he is 10 years old? Or will he like to play with dolls?

Biology: Will he have boy blood or girl blood?

Taylor, 1996; Gelman, 2003

Do children essentialize gender?

- From the age of 4 on, children provided essentialist responses – e.g., despite the environment, the boy will grow up to like football
- In fact, especially for the behavior/preference items, the younger children essentialized more than the older ones!

The downside of essentialism

When essentialism is applied to the social domain – stereotyping!

Members in a social category that is essentialized are thought to possess many nonobvious properties in common (e.g., biology, preferences, abilities).

This type of inference is often false.

Unfortunately, it's not just children who essentialize...

Larry Summers, former president of Harvard University

When explaining why there are so few women "in high-end scientific professions", he said

"In the special case of science and engineering, there are issues of intrinsic aptitude, and particularly of the variability of aptitude, and that those considerations are reinforced by what are, in fact, lesser factors involving socialization and continuing discrimination"

Children are "essentialists" (e.g., Gelman)

... with respect to

- natural kinds?



- social categories?



- artifacts?

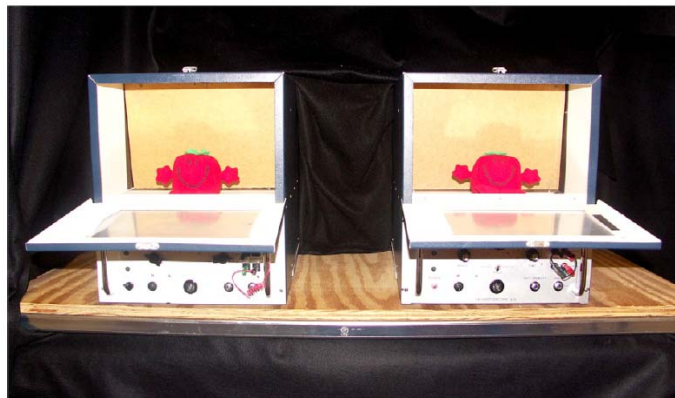
Essentializing artifacts

Example:

Picasso original vs. perceptually identical
Picasso copy – which one would you want?
why?

How about children?

Meet the “copying machine”:



Hood & Bloom, 2008

How about children?

Of the 22 3- to 6-year-old children with
“attachment objects”

4 refused to let the experimenter copy it

only 5 of the remaining 18 (28%) chose
the duplicate

Hood & Bloom, 2008

Creator's intent

Another example: appreciation of the creator's
intent when deciding what to name artifacts



Creator's intent

Intentional:

(I) Jane went and got a newspaper. Then she carefully bent it and folded it until it was just right. Then she was done. This is what it looked like.



Gelman & Bloom, 2000

Creator's intent

Accidental:

(A) Jane was holding a newspaper. Then she dropped it by accident, and it fell under a car. She ran to get it and picked it up. This is what it looked like.



Gelman & Bloom, 2000

Creator's intent

"What is this?"

	e.g., "a hat"	e.g., "paper"
	Naming (%)	Material (%)
<i>3-year-olds</i>		
Intentional	41	39
Accidental	16	53
<i>5-year-olds</i>		
Intentional	58	23
Accidental	30	54
<i>Adults</i>		
Intentional	72	30
Accidental	14	82

Creator's intent

Even 3-year-olds use information about the creator's intent when deciding what to name objects.

Children are “essentialists” (e.g., Gelman)

... with respect to

- natural kinds? 
- social categories? 
- artifacts? 